WHAT IS CLAIMED IS:

1. A method of manufacturing an insulating layer comprising:

creating a process atmosphere in a chamber for forming a fluidal insulating layer by (a) flowing an oxidizing gas at an oxidizing gas flow rate for forming an oxidizing atmosphere, (b) flowing a first carrier gas at a first carrier gas flow rate, and (c) flowing a second carrier gas at a second carrier gas flow rate, the second carrier gas flow rate being greater than the first carrier gas flow rate; and

forming the fluidal insulating layer on a substrate positioned in the chamber by (d) flowing the oxidizing gas at the oxidizing gas flow rate, (e) flowing the first carrier gas at the first carrier gas flow rate while carrying a first impurity including boron flowing at a first impurity flow rate, (f) flowing the second carrier gas at the second carrier gas flow rate while carrying a second impurity including phosphorus flowing at a second impurity flow rate, the second carrier gas flow rate being greater than the first carrier gas flow rate, and (g) flowing a silicon source material at a silicon source flow rate.

2. A method of manufacturing an insulating layer as claimed in claim 1, wherein during the creating and forming steps, the oxidizing gas is one selected from a group consisting of oxygen gas, ozone gas and a mixture thereof, the first carrier gas is a nitrogen gas, the second carrier gas is a helium gas, the silicon source material is tetraethylorthosilicate (TEOS), the first impurity is one selected from a group consisting of triethylborate (TEB), trimethylborate (TMB), and a mixture thereof, and the second impurity is one selected from a group consisting of triethylphosphate (TEPO), trimethylphosphate (TMPO) and a mixture thereof.

3. A method of manufacturing an insulating layer as claimed in claim 1, wherein for the forming of the process atmosphere, a ratio of the oxidizing gas flow rate, the first carrier gas flow rate, and the second carrier gas flow rate is about 1.00 - 2.50 : 0.70 - 0.95 : 1.

4. A method of manufacturing an insulating layer as claimed in claim 3, wherein the second carrier gas flow rate is at least 4,000 sccm.

5. A method of manufacturing an insulating layer as claimed in claim 1, wherein for the forming of the fluidal insulating layer, a ratio of the oxidizing gas flow rate, the first carrier gas flow rate, the second carrier gas flow rate, the silicon source flow rate, the first impurity flow rate, and the second impurity flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25 : 0.040 - 0.045 : 0.013 - 0.014.

6. A method of manufacturing an insulating layer as claimed in claim 5, wherein the second carrier gas flow rate is at least 4,000 sccm.

7. A method of manufacturing an insulating layer as claimed in claim 1, further comprising forming an etch stop layer on the substrate prior to forming the fluidal insulating layer.

8. A method of manufacturing an insulating layer as claimed in claim 1, wherein before forming the fluidal insulating layer, further comprising forming an undoped fluidal insulating layer on the substrate, and wherein for forming the undoped fluidal insulating layer, the ratio of the oxidizing gas flow rate, the first

carrier gas flow rate, the second carrier gas flow rate, and the silicon source flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25.

9. A method of manufacturing an insulating layer as claimed in claim 8, wherein the second carrier gas flow rate is at least 4,000 sccm.

10. A method of manufacturing an insulating layer as claimed in claim 8, wherein the undoped fluidal insulating layer is formed within about three seconds.

11. A method of manufacturing an insulating layer as claimed in claim 1, further comprising reflowing the fluidal insulating layer after the forming thereof.

12. A method of manufacturing an insulating layer as claimed in claim 1, wherein the creating of the process atmosphere in the chamber includes,

flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 1.00 - 1.25 : 0.70 - 0.95 : 1;

forming a pressurized atmosphere in the chamber utilizing a pumping apparatus communicating with the chamber, while flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 2.00 - 2.50 : 0.70 - 0.95 : 1; and

stabilizing the pressurized atmosphere formed in the chamber by flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 2.00 - 2.50 : 0.70 - 0.95 : 1.

13. A method of manufacturing an insulating layer as claimed in claim 12, wherein the flowing continues for less than five seconds, the forming a pressurized atmosphere continues for less than 60 seconds at a pressure of at least 160Torr, and the stabilizing continues for less than fifteen seconds.

14. A method of manufacturing an insulating layer as claimed in claim 1, wherein the fluidal insulating layer is formed within fifteen seconds.

15. A method of manufacturing a semiconductor device comprising:

forming an etch stop layer on a substrate positioned in a chamber;

creating a process atmosphere in the chamber for forming a fluidal insulating layer by (a) flowing an oxidizing gas at an oxidizing gas flow rate for forming an oxidizing atmosphere, (b) flowing a first carrier gas at a first carrier gas flow rate, and (c) flowing a second carrier gas at a second carrier gas flow rate, the second carrier gas flow rate being greater than the first carrier gas flow rate;

forming a fluidal insulating layer on the etch stop layer by (d) flowing the oxidizing gas at the oxidizing gas flow rate, (e) flowing the first carrier gas at the first carrier gas flow rate while carrying a first impurity including boron flowing at a first impurity flow rate, (f) flowing the second carrier gas at the second carrier gas flow rate while carrying a second impurity including phosphorus flowing at a second impurity flow rate, the second carrier gas flow rate being greater than the first carrier gas flow rate, and (g) flowing a silicon source material at a silicon source flow rate;

reflowing the fluidal insulating layer utilizing oxygen gas and hydrogen gas to planarize an upper surface of the fluidal insulating layer and to fill recessed portions on the substrate with the fluidal insulating layer; and

forming a pattern having a window in the fluidal insulating layer for exposing a surface of the etch stop layer by etching a predetermined portion of the fluidal insulating layer.

16. A method of manufacturing a semiconductor device as claimed in claim 15, wherein the etch stop layer comprises silicon nitride and is formed to a thickness of about 60-150Å.

17. A method of manufacturing a semiconductor device as claimed in claim 15, wherein the oxidizing gas is one selected from a group consisting of oxygen gas, ozone gas and a mixture thereof, the first carrier gas is a nitrogen gas, the second carrier gas is a helium gas, and wherein ratio of the oxidizing gas flow rate, the first carrier gas flow rate, and the second carrier gas flow rate is about 1.00 - 2.50 : 0.70 - 0.95 : 1.

18. A method of manufacturing a semiconductor device as claimed in claim 17, wherein the second carrier gas flow rate is at least 4,000 sccm.

19. A method of manufacturing a semiconductor device as claimed in claim 17, wherein the creating of the process atmosphere in the chamber includes,

flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 1.00 - 1.25 : 0.70 - 0.95 : 1;

forming a pressurized atmosphere in the chamber utilizing a pumping apparatus communicating with the chamber, while flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 2.00 - 2.50 : 0.70 - 0.95 : 1; and

stabilizing the pressurized atmosphere formed in the chamber by flowing the oxidizing gas, the first carrier gas, and the second carrier gas in the chamber in a flow rate ratio of about 2.00 - 2.50 : 0.70 - 0.95 : 1.

20. A method of manufacturing a semiconductor device as claimed in claim 19, wherein the flowing continues for less than five seconds, the forming a pressurized atmosphere continues for less than 60 seconds at a pressure of at least 160Torr, and the stabilizing continues for less than fifteen seconds.

21. A method of manufacturing a semiconductor device as claimed in claim 15, wherein during the creating and forming steps, the oxidizing gas is one selected from a group consisting of oxygen gas, ozone gas and a mixture thereof, the first carrier gas is a nitrogen gas, the second carrier gas is a helium gas, the silicon source material is tetraethylorthosilicate (TEOS), the first impurity is one selected from a group consisting of triethylborate (TEB), trimethylborate (TMB), and a mixture thereof, and the second impurity is one selected from a group consisting of triethylphosphate (TEPO), trimethylphosphate (TMPO) and a mixture thereof.

22. A method of manufacturing a semiconductor device as claimed in claim 21, wherein for the forming of the fluidal insulating layer, a ratio of the oxidizing gas flow rate, the first carrier gas flow rate, the second carrier gas flow rate, the silicon

source flow rate, the first impurity flow rate, and the second impurity flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25 : 0.040 - 0.045 : 0.013 - 0.014.

23. A method of manufacturing a semiconductor device as claimed in claim 22, wherein the second carrier gas flow rate is at least 4,000 sccm.

24. A method of manufacturing a semiconductor device as claimed in claim 23, wherein the fluidal insulating layer is formed to a thickness of about 8,000-10,000Å within fifteen seconds.

25. A method of manufacturing a semiconductor device as claimed in claim 15, wherein the pattern having the window is formed by etching the fluidal insulating layer by utilizing an etching gas including CFx.

26. A method of manufacturing a semiconductor device as claimed in claim 15, wherein before forming the fluidal insulating layer, further comprising forming an undoped fluidal insulating layer the substrate, and wherein for the forming of the undoped fluidal insulating layer, the ratio of the oxidizing gas flow rate, the first carrier gas flow rate, the second carrier gas flow rate, and the silicon source flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25.

27. A method of manufacturing a semiconductor device as claimed in claim 26, wherein a flow rate of the second carrier gas is at least 4,000 sccm.

28. A method of manufacturing a semiconductor device as claimed in claim 27, wherein the undoped fluidal insulating layer is formed to a thickness of about 30-50Å within five seconds.

29. A semiconductor device comprising:

a substrate having a gate electrode formed at an upper portion of the substrate, a source and a drain formed at a lower portion of both sides of said gate electrode; and

an insulating layer continuously formed on the substrate and the gate electrode, the insulating layer being formed by (a) flowing the oxidizing gas at the oxidizing gas flow rate, (b) flowing the first carrier gas at the first carrier gas flow rate while carrying a first impurity including boron flowing at a first impurity flow rate, (c) flowing the second carrier gas at the second carrier gas flow rate while carrying a second impurity including phosphorus flowing at a second impurity flow rate, and (d) flowing a silicon source material at a silicon source flow rate,

wherein, for the insulating layer composition, a ratio of the oxidizing gas flow rate, the first carrier gas flow rate, the second carrier gas flow rate, the silicon source flow rate, the first impurity flow rate, and the second impurity flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25 : 0.040 - 0.045 : 0.013 - 0.014, and wherein a flow rate of the second carrier gas is at least 4,000 sccm.

30. The semiconductor device as claimed in claim 29, wherein the oxidizing gas is one selected from a group consisting of oxygen gas, ozone gas and a mixture thereof, the first carrier gas is a nitrogen gas, the second carrier gas is a helium gas, the silicon source material is tetraethylorthosilicate (TEOS), the first

impurity is one selected from a group consisting of triethylborate (TEB), trimethylborate (TMB), and a mixture thereof, and the second impurity is one selected from a group consisting of triethylphosphate (TEPO), trimethylphosphate (TMPO) and a mixture thereof.

31. The semiconductor device as claimed in claim 29, further comprising an etch stop layer formed on the substrate and underlying the insulating layer.

32. The semiconductor device as claimed in claim 31, further comprising an undoped insulating layer interposed between the etch stop layer and the insulating layer.

33. The semiconductor device as claimed in claim 32, wherein, for the undoped insulating layer composition, the ratio of the oxidizing gas flow rate, the first carrier gas flow rate, the second carrier gas flow rate, and the silicon source flow rate is about 2.00 - 2.50 : 0.70 - 0.95 : 1 : 0.15 - 0.25.